

The Problems of LSD²⁵ and Emotional Disorder

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OVER THE PAST YEAR in the United States a new problem has arisen—that of abuse of LSD (lysergic acid diethylamide). The problem seemed to develop rather suddenly in the late summer of 1966 as increasing numbers of persons began to arrive at psychiatric clinics and medical emergency rooms throughout the country with symptoms following LSD ingestion. This occurred at about the same time that the mass media were publicizing LSD—unfortunately often in a seductive, alluring way—as a panacea for man's problems. Most of the major magazines, newspapers and television networks have featured one or another aspect of LSD, including, for example, its alleged use in helping architects build better buildings and enhancing creativity in art and music. It has been publicized as an answer to a variety of sexual problems and problems of living in general, as well as a revolutionizer in the treatment of mental illness.

Then, as the dangers of this drug became recognized, first in Southern California and in New York City, and then throughout the country, particularly on college campuses, a wave of hysteria began to sweep the nation. Federal laws passed early in 1965 making possession of LSD for sale or manufacture illegal (The Drug Abuse Control Amendments of 1965) did not stem the tide. The one legal manufacturer of the drug, Sandoz Laboratories, stopped the production of LSD in May of 1966, and all Sandoz-sponsored grants for research on this drug were cancelled.

This atmosphere of hysteria continues to pervade the entire LSD problem. Literature has ap-

peared which blames LSD on the Communists and everyone seems to have his own theory on what should be done. In October of 1966, California (along with two other states) made even the possession of this drug illegal. In the meantime, much research into the LSD problems and potentials is being discontinued. Little is really known yet about LSD. This article will attempt to present some of the things that are known, and point up the many areas of uncertainty with particular emphasis on the psychological ramifications connected with the use of LSD.

Historical Factors

Lysergic acid diethylamide tartrate (LSD^{25*}) was synthesized in 1938 by a Swiss scientist named Hoffman. He recognized its perception-altering properties in 1943. Lysergic acid, the precursor of LSD is a constituent of ergot, a fungus that grows on rye. The drug is related to psilocybin, the active alkaloid of the Mexican mushroom, and to mescaline which is found in the peyote cactus buttons, except that it is many times stronger than these "hallucinogens." Morning Glory seeds also contain LSD-like compounds, although in milder form.

Man has used drugs which change the state of consciousness for thousands of years. Cannabis (Indian hemp) was brought to Europe in 1500 B.C. from Asia, and to the United States in 1920 as marijuana. Psilocybin and peyote were used by the Aztec Indians in Mexico centuries ago. Now we live in a drug age; it is an age of flagrant drug abuse. Thus perhaps it was only natural, once the word spread about LSD bringing the fountain of youth, for our culture to embrace this drug. Aldous Huxley first described its joys in his *Doors of Perception* in 1954.

*Commonly known as LSD, or by users as acid or L.

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The use of LSD was first mainly limited to the upper middle classes, professionals and intellectuals, but gradually its usage has spread from colleges to high schools to junior high schools, and now to lower income groups. This should not surprise us when we have seventy million users of alcohol with five million alcoholics, and when thirteen billion doses of amphetamines and barbiturates are manufactured per year in the United States. The LSD problem has now also spread to England, Holland and France.

The term *psychedelic*, or "mind-manifesting," was coined by Osmond in 1957. To describe LSD as hallucinogenic is not always accurate, although widespread, because persons who see or hear things following LSD ingestion usually perceive *actual* objects or sounds as accentuated and/or distorted. These are then illusions, like a mirage, rather than true hallucinations, although sometimes true hallucinations do occur.

At first these perceptual changes caused by LSD were hailed as offering an experimental way to mimic schizophrenia and thus to study it. The "model psychosis" theory of LSD was thus conceived.^{16,17} This theory died gradually as it was realized that LSD psychosis did not indeed mimic that of schizophrenia. Not only were there such dissimilar factors as the absence of so cardinal a symptom of schizophrenia as autism, but even the nature of the "hallucinations" was fundamentally different.

Physiologic Effects

Physiologically, LSD has few effects. It is readily absorbed from the intestinal tract. Thus there is little advantage in intravenous injection of the drug, although occasionally a user will try injecting it for a change.

There is usually a loss of appetite, although some studies have reported an increase in appetite following ingestion. Nausea, dizziness, headache and palpitations are often experienced, and periods of shivering alternate with heat flushes. The pupils are dilated and LSD users often wear sun-glasses, even at night, to combat photophobia. Heart rate and both systolic and diastolic blood pressures rise moderately, as does blood sugar. A fine tremor of the fingers and hands may be present. Recently grand mal seizures were observed in a previously non-epileptic person following ingestion of LSD.⁶

The drug is not physiologically addicting in that there are no withdrawal symptoms following dis-

continuation. However, it is psychically addicting in that after taking it the user frequently becomes convinced that he wants to keep taking it. In fact, LSD users, in contrast to hard narcotics addicts, develop a remarkable missionary or proselyting quality.

Laboratory techniques are not sensitive enough to determine the LSD concentration in body fluids and tissues, so C₁₄-labeled LSD has been used in animals. The highest concentration is found in the liver and the kidneys. The highest concentration in the brain is found in the hippocampus, basal ganglia, thalamic nuclei and cerebral cortex.⁸ Behavior changes occur after the brain concentration of LSD is decidedly decreased. Most of LSD's metabolites are excreted in the feces.¹²

Tolerance to LSD develops rapidly; thus users rarely regularly take LSD more than twice weekly. There is no lethal dosage known in humans. One direct fatality was an elephant that died from an overdose when he was given 100 *milligrams* of LSD per kilogram of body weight in an experimental situation.*⁵ Monkeys die after receiving 5 mg per kilogram of body weight.

Psychologic Effects

Sensations become intensified and perceptions are distorted under LSD. One man slept on the floor the night he took LSD because he was sure his bed was only two inches long. Illusory phenomena are common. Another man was restrained from diving off a cliff onto the rocks and the ocean below. Later he explained that he felt the breaking waves were a silk scarf and he wanted to dive into it. Faces often appear to be melting. One high school student cut all the flexor tendons in her wrist when she looked in the mirror and saw her face begin to dissolve. Time sense is especially distorted. We have seen persons under the influence of LSD stare at their fingers or at a leaf for hours. True hallucinations, predominantly visual, also occur.

Delusions are not infrequent. We treated, in crisis intervention, a young man who became convinced, a few hours after ingesting LSD for the first time, that he had to offer a human sacrifice, that is, kill someone, or die himself. He was prevented from throwing his girl friend off the roof of a Hollywood hotel. Additional comments on psychologic effects will be made later in a discussion of side effects.

*Also reported in Cashman, John: *The LSD Story*, Fawcett Publications, Greenwich, Conn., 1966, pp. 50-51.

Mode and Site of Action

Neither the mode nor the site of action of LSD is definitely known. It is even unknown whether the various perceptual distortions—"hallucinations" and the like—can be attributed to a primary action of LSD or whether these different effects involve different mechanisms and sites of action. The perceptual dysfunction itself, unassociated with impairment of skilled motor performance, presumably originates at a high level in the nervous system. The hallucinations, intensified with sensory deprivation, also seem to be of central origin, and not an enhancement of responses to peripheral stimuli.

Frontal lobe ablation in chimpanzees does not abolish a previously induced panic reaction in these animals.¹ Implanted cortical electrodes in humans following LSD have revealed paroxysmal electrical activity in the hippocampal gyri, amygdaloid nuclei and septum which parallel the perceptual changes.¹¹

LSD is a strong antagonist to serotonin both *in vitro* and *in vivo*. One hypothesis for the action of LSD is that it antagonizes serotonin in the central nervous system, in which it is found especially in the basal ganglia. Another theory, based on the observation that most of the LSD has left the brain before the mental effects are seen, is that LSD acts as a trigger or is changed into a metabolite which in turn causes the mental changes. LSD also affects various enzyme systems within the body. Inhibition of cholinesterase and monamine oxidase in spinal cord neurons has been demonstrated in animals following LSD administration.

Animal Experiments

Dogs and cats exhibit behavioral changes, like pawing the air, which suggest they may be hallucinating. They become confused in the performance of various tests. Pigeons become catatonic. Ants attack their nestmates. Spiders spin disorganized webs. Body temperature increases, particularly in rabbits. Large doses of LSD cause complete blindness in cats and monkeys. As was mentioned previously, very large doses kill monkeys.

Three Areas of Research

There have been three main approaches in the work on LSD to date. The first has to do with the controlled administration of a known amount of LSD experimentally, following the screening of subjects by psychiatric interviews and/or psycho-

logical testing. Resultant subjective and/or objective effects of the drug are then recorded in this "experimental" study of LSD.^{6,7} There are a number of experimental studies about personality and performance changes under LSD and, particularly with work on LSD, the "set" of the researcher (his attitude toward LSD) may become apparent. For example, in one experiment raters were used who worked gratis, who may have taken LSD themselves, and who were instructed to rate patients as improved if they were "more flexible" and demonstrated less "unrealistic rigidity."¹³ One must be careful and critical in evaluating such studies.

The evaluation of creativity under LSD is extremely difficult. If an artist paints a picture while on LSD it may be rejected by the public and also by art critics and yet it could conceivably be a creative work. Perhaps this reservation also applies when the artist himself (as was once our experience) later terms his artistic effort under LSD "just chicken scratches." But certainly many persons do *feel* that they are more creative under LSD. Subjective feelings of improvement concomitant with objective decrease in performance will be dealt with further under a discussion of side effects later in this article.

The second type of approach with LSD has to do with its therapeutic effectiveness. It has been used for alcoholics to help them stop drinking.³ It has been used in patients dying of cancer to alleviate the pain and help them die a more "dignified" death.⁹ It has been used as a psychotherapeutic aid in general to increase insight and lift repressions,¹⁰ and with autistic children to increase socialization.¹⁴ More extensive claims have been made for LSD, and it has been cited as a specific cure for frigidity, impotence and homosexuality.

It is difficult, but essential, to evaluate just what therapeutic efficacy LSD does possess. Extravagant claims and total disclaimers now vie in an atmosphere of hysteria. Several points are noteworthy. For an experiment to be valid, it should be possible to reproduce the results. This has not yet been convincingly done in the therapeutic approach to LSD, in our opinion.

In addition, the attitude of the researcher is vital. We have spoken to researchers, themselves LSD users, who become so enthusiastic that they even refused to consider psychosis and suicide as bad results. Particularly with LSD work, as with hypnosis, one's attitude and expectations are vital factors in the results one achieves.

And finally, it is essential that there be only one variable at a time. In one experiment for example, to find that the recidivism rate among psilocybin-treated prisoners was significantly less than among those not treated sounded encouraging until further scrutiny revealed that the treatment group received many other advantages. These included close relationships with the investigators, a special pre-parole course of instruction, special assistance in obtaining housing and employment and follow-up contact from the researchers. It would be hard to say that it was the LSD alone that helped.

The third approach to LSD has to do with observation of the side effects which occur following the ingestion of the drug. There are both acute and chronic side effects, and their occurrence *cannot* be predicted. Psychiatric interviews and psychological testing do not screen out adverse reactors. Some of the worst reactions have been in persons, often physicians and other professionals, who appeared stable by every indicator. Conversely, others who have had past histories of severe psychiatric problems and have been leading marginal existences have seemed to tolerate LSD without ill effect.

There is some work to show that persons who place a premium on self control, planning, caution and impulse restriction, and who sacrifice spontaneity, do particularly poorly on LSD.²

Acute Side Effects

Four major types of acute symptoms have been seen. These include, in decreasing frequency, hallucinations (both auditory and visual), anxiety to the point of panic, severe depression with suicidal thoughts or attempts and confusion. These symptoms may occur in patients who have taken the drug once or 60 times. They occur in persons who have only taken LSD as well as in persons who are chronic multiple drug abusers.

At the Psychiatric Emergency Room and Admitting Office of the Neuropsychiatric Institute at the University of California, Los Angeles (UCLA), Medical Center before September of 1965, approximately one problem case associated with LSD ingestion was seen every other month. In the seven months from September 1965 to 1 April 1966, the incidence of "LSD cases" increased to between five and 15 a month and made up 12 per cent of all cases dealt with by the psychiatric emergency service.¹⁸ The 70 "LSD patients" seen in the seven-month period (and in increasing numbers

despite the Federal Drug Abuse Control Amendments, effective 1 February 1966) had several characteristics. The group was predominantly single, white, male and young (average age, 21). The members came from throughout the Los Angeles area and most were either unemployed or students. Twenty-eight (40 per cent) of the group had taken drugs other than LSD within six weeks of being seen in the emergency room. Twenty-five (36 per cent) had a history of chronic marijuana use, but 28 (40 per cent) had never taken drugs other than LSD. Our sample contained no professional persons, in contrast to the findings of others that "LSD seems mainly to be used by professionals, intellectuals or middle-class people."²

Treatment of the acute symptoms first must be directed toward preventing the patient from physically harming himself or others. Thus the frequent indication for psychiatric hospitalization. Twenty-five of the 70 patients in our study were admitted to hospital. It is important for the therapist not to increase the patient's anxiety by being anxious himself. One patient panicked when he called a center for crisis intervention and was told by the therapist on call that he had "just caused permanent irreversible brain damage" to himself by taking LSD.

Chemical agents are also a vital part of the treatment regime. Chlorpromazine (Thorazine®) is the most effective antagonist to LSD's effects.⁴ This is seen clinically by reversal of the hallucinations and can also be demonstrated by reversibility of the electroencephalographic changes.¹¹ This antagonistic effect of chlorpromazine can also be demonstrated in animal experiments.¹⁵ In contrast, reserpine may actually enhance the effect of LSD.¹¹ Barbiturates may have some antagonistic effects to LSD, as may azacyclonal (Frenquel®). It should be emphasized however that chlorpromazine is not always effective in treatment of LSD complications. For example, a 22-year-old, single, white man became psychotic approximately 24 hours after the ingestion of LSD. He had both auditory and visual hallucinations. He had used LSD once before without difficulty. Several parenteral doses of 50 mg of chlorpromazine, plus orally administered chlorpromazine up to 2,000 mg per day, and chlorpromazine in conjunction with trifluoperazine hydrochloride (Stelazine®), resulted in no reduction or improvement of the psychosis. The patient improved slowly after a period of six weeks; the improvement was seemingly unrelated

to the phenothiazine medication. It is important to note that recurrences of the acute side effects from LSD in all their original intensity often appear up to a year after the ingestion, without further ingestion of the drug. This is regardless of set or setting, which we will elaborate upon further. The efficacy of inducing these side effects in chemical warfare, via contamination of the water supply or as inhalants in the air, is, as far as we know, unproven to date.

Chronic Side Effects

Certain chronic changes have been noted among LSD users. While the authors' initial observations were drawn from patients who had been put in hospital, we have also had the opportunity to observe large numbers of persons in the community who have taken LSD.¹⁹ Many had had bad experiences but had not seen a physician or gone to a hospital. These persons in the community who had the chronic LSD reactions in varying degrees, varied from white collar workers and professional people to unemployed "beatniks," construction workers and longshoremen.

We have observed the ingestion of LSD by individuals and by groups of from two to three to 50 or 60 persons. We have seen it taken indoors and also in scenic surroundings, at "kick-type" Hollywood parties and at quiet religious gatherings, and from Orange County to San Francisco.

An effect of LSD that has been noticed quite frequently and is particularly striking to us is a dramatic shift in one's value systems. Many persons after using LSD are no longer interested in working or playing what they call the "ego games" of society.* LSD users often leave their families and become quite withdrawn, devoting most of their time to thinking, writing and talking about LSD. They take quite literally Dr. Timothy Leary's admonition to "turn on, tune in, and drop out." We met one man at an LSD party who had spent the previous two years wandering around the desert with a pack on his back, contemplating the experiences of LSD. Three years before, he had been an international lawyer in New York City. We have talked to students who, after taking LSD, became much less interested in their academic work and preferred to spend their time "thinking kind thoughts." We have seen formerly productive per-

sons who have adopted the attitude that one should live merely for subjective introspective experiences and not play the various "games," like work, that society demands. Since many people who experience this change of attitude are never seen by psychiatrists, one can only speculate as to their frequency.

Another chronic difficulty with LSD is what we would term "perceptual distortion." This refers to a subjective feeling of improvement concomitant with an objective loss of functioning. For example, a band leader phoned us because his drummer was producing such terrible music. He was so out of tune and rhythm that patrons were unable to dance to the band's music. Nevertheless when we interviewed the drummer, he told us that he felt he was playing "like Gene Krupa," and was more than satisfied with his music. A law student told us that LSD had opened such horizons that he felt his legal studies were dull and boring by comparison. He speculated at length (while lying in his room during and between LSD trips) about the advisability of giving the world's leaders LSD so that they would love, not hate or make war. A group of LSD users whom we studied fairly intensively over a period of several months were convinced that they could "pick up vibrations" from other people, and that they could determine if someone else had used LSD merely by casual inspection. When these convictions were put to a test, these persons were completely unable to discriminate as to who had used LSD or what someone else was thinking. In fact we found that they appeared to have actually suffered a loss of their ability to discriminate and to observe.

Unfortunately, the idea of LSD seems to have particular attraction for the adolescent. Most adolescents are struggling with feelings of aggression and sexuality, along with the need to establish an identity, and many of them see LSD as offering a "magic solution" for these struggles. LSD provides an intense introspective experience to the adolescent, and enables him to deny feelings of aggression and sexuality at the same time that it gives him "membership" in the group of LSD users with a common language and dress. But many times the adolescent is so overwhelmed by the LSD experience that his search for identity becomes a florid, psychotic nightmare. Similarly, the attempt to use LSD is a way of denying sexuality and aggression, which robs the adolescent of his chance to work out his conflicts in regard to these instinctual drives in a healthy way. There is probably no

*Dr. Timothy Leary called ego games "The tribal game . . . mechanized, computerized, socialized, intellectualized, televised, sanforized" [Playboy Magazine, September 1966, p. 106]. In other words, conformity, work and organization as well as materialism, are all called "ego games" by LSD users.

other period in our lives more loaded with conflict than adolescence. Yet, it is persons of this very age group that, by virtue of their struggles, are the most attracted to the magic promises of LSD. This is one of the truly great dangers of the drug.

The criteria for mental health, according to Freud, are the ability to work and to love, and LSD users seem to have special difficulties in both of these areas. We have already mentioned the numerous persons we have observed who have lost their incentive to work after using LSD. The ability to love, that is to have psychic intimacy with another person, seems also to be decreased by LSD. In contradiction to the claims that the drug helps one to get closer to other people, we have noticed that users become more introspective and invested in themselves. Several LSD sessions that we have attended were filled with excited individuals proclaiming their feeling of being especially close to various other people in the room. Nevertheless, we were impressed with the number of monologues that were taking place at the sessions. Very few of the participants were at all interested in or relating to others. On the other hand, they seemed to be enjoying their highly introspective experience, the extreme results of which are autism and psychosis.

LSD also seems to provide more primitive defenses against the normal anxiety and depression that most of us face. We have noticed many LSD users who develop a more primitive way of handling their feelings. While many of us get angry, anxious, depressed or even withdrawn when we encounter periods of stress, the LSD user often hallucinates, becomes paranoid or perceives people as caricatures. As was previously mentioned, users frequently experience their psychotic or other symptoms in their original intensity as much as a year after using the drug and without taking the drug again. Thus, many people who have a great deal of difficulty tolerating the anxiety and stress of everyday living anyway are provided, in a sense, with a psychotic defense by LSD. They experience an estrangement from reality with the drug.

Another disturbing aspect of the use of LSD is the missionary quality that develops in many of its users. Many LSD users are so affected by the drug that it becomes impossible for them to be objective when discussing its effects.²⁰ Unfortunately this lack of objectivity has extended to some researchers in the field, researchers who also are LSD users.

There is a great deal of proselyting and insistence on the part of users that other persons must share the same kind of subjective awareness that they experience. We have no doubt that this is a sincere conviction on the part of many LSD users, since in our research we have seen mothers who have given LSD to their infants, brothers who encourage their sisters to take LSD, and individuals who have taken their life's savings and purchased LSD in order to distribute it gratis to complete strangers. Despite all these chronic personality and behavioral changes, organic brain damage has not yet been demonstrated in humans.

The "Trip" Itself

Users of LSD call themselves "acid heads," and the LSD experience itself is a "trip." (The signs on cars which read "CONSULT YOUR LOCAL TRAVEL AGENT" refer to the LSD trip.) Many users prefer to have their experience out of doors, particularly by the ocean or a lake, or in the mountains or woods, or in the desert. They usually ingest what has been sold to them as anywhere from 100 to 250 micrograms of LSD, although the amount and purity of the substance is questionable because of its black-market source. It is available at anywhere from 50 cents to 10 dollars. Atropine-like compounds have been substituted for LSD. We recently had one capsule, purchased by a user who paid for 250 micrograms, analyzed. It was found to contain approximately 100 micrograms of LSD.

Users usually like to hear music (particularly played by performers like Ravi Shankar) and to see intense colors (witness the rash of "light shows" and the use of strobe lights) while they have their LSD experience. They often read, especially from the Tibetan Book of the Dead, although often silently. Many chronic users have developed "aids" to help them reverse any bad effects—often reassuring phrases from various psychedelic books. (We have seen a number of users whose aids did not help.) One hundred to 250 micrograms is the usual dosage for an LSD experience although a number of users claim to have ingested 2,000 micrograms daily for a period of weeks.

A great deal has been written about "set" and setting. The set or attitude with which one approaches the LSD experience is extremely important, as with hypnosis. In fact, people are now taking trips *without* drugs.²¹ However, set does not completely determine the type of "trip." For, other

Chlorpromazine—*Thorazine*.
 Azacyclonal—*Frenquel*.
 Trifluoperazine hydrochloride—*Stelazine*.

REFERENCES

1. Baldwin, M., Lewis, S. A., and Bach, S. A.: The effects of lysergic acid diethylamide after cerebral ablation, *Neurology*, 9:469-474, 1959.
2. Blum, R., (Ed): *Utopiates: The Use and Users of LSD*,²⁸ Atherton Press, New York, 1964.
3. Chwelos, N., Blewett, D. B., Smish, C. W., and Hoffer, A.: Use of LSD in the treatment of alcoholism, *Quart. J. Stud. Alc.*, 20:577-590, 1959.
4. Clark, L. D., and Bliss, E. L.: Psychopharmacological studies of lysergic acid diethylamide (LSD²⁸) intoxication, *A.M.A. Arch. Neurol. and Psychiat.*, 78: 653-655, 1957.
5. Cohen, S.: *The Beyond Within*, Atherton Press, New York, 1964.
6. Fisher, D., and Ungerleider, J. T., Grand Mal seizures after LSD ingestion, in preparation.
7. Hollister, L. E., and Hartman, A. M.: Mescaline, LSD and Psilocybin: Comparison of clinical syndromes, effects on color perception and biochemical measures, *Comp. Psychiat.*, 3:235-241, August 1962.
8. Jacobsen, Erik: The clinical pharmacology of the hallucinogens, *Clin. Pharmacol. Ther.*, 4:480-503, July-August 1963.
9. Kast, E.: Pain and LSD²⁸: A theory of attenuation of anticipation, from *LSD, the Consciousness-Expanding Drug*, Edited by D. Solomon, Putnam Sons, N.Y., 1964, p. 241.
10. Lewis, D. J., and Sloane, R. B.: Therapy with LSD, *J. Clin. Exp. Psychopath.*, 19:19-27, 1958.
11. Monroe, R. R., Heath, R. C., Mickle, W. A., and Llewellyn, R. C.: Correlation of rhinencephalic electrograms with behavior: A study on humans under the influence of LSD and Mescaline, *Electroencephalog. Clin. Neurophysiol.*, 9:623-642, 1957.
12. Rinkel, M.: Pharmacodynamics of LSD and Mescaline, *J. Nerv. and Ment. Dis.*, 125:424-427, July 1957.
13. Savage, C., Fadiman, J., Mogar, R., and Allen, Mary H.: The effects of LSD therapy on values, personality and behavior, *Int. J. of Neuropsychiat.*, 2:241-254, June 1966.
14. Simmons, J. Q. III, Leiken, S. J., Lovas, O. S., Shaeffer, B., and Perloff, B.: Modification of autistic behavior with LSD, *A. J. Psychiat.*, 122:1202-1211, May 1966.
15. Sturtevant, F. M., and Drill, V. A.: Effects of mescaline in laboratory animals and influence of ataraxics on mescaline response, *Proc. Soc. Exper. Biol. and Med.*, 92:383-387, 1956.
16. Tolan, E. J., and Lingl, F. A.: Model Psychosis produced by inhalation of gasoline fumes, *Amer. J. Psychiat.*, 120:757-761, February 1964.
17. Unger, S. W.: Mescaline, LSD, Psilocybin and personality change, *Psychiat.*, 26:111-125, May 1963.
18. Ungerleider, J. T., Fisher, D., and Fuller, M.: The dangers of LSD, *J.A.M.A.*, 197:109-112, August 1966.
19. Ungerleider, J. T., and Fisher, D.: LSD: Research and Joyride, *The Nation*, 16 May 1966.
20. Ungerleider, J. T., and Fisher, D.: LSD: Fact and fantasy, *Arts & Architecture*, 83:18-20, December 1966.
21. *The Psychedelic Game: Mademoiselle*, March 1966, p.179.

experiments have recorded subjects who expected psychotic reactions from LSD but experienced only pleasant feelings of relaxation.² And we have seen persons who appeared to take the drug under what they felt were ideal conditions, subsequently have a very severe adverse experience.

The setting in which one takes LSD is likewise a very important variable. Persons given LSD without their knowledge are extremely liable to become panicky and have a severe reaction. There are several such incidents recorded and one alleged suicide following a party where the punch had been "spiked with LSD. However, it is not usual for LSD to be secretly placed in punch or any other liquid. The user wants people to take LSD, but to know that they are taking it. We have seen persons who have taken LSD in what they consider an ideal setting (with one or two good friends, with a guide or "sitter," with soft music playing, and in a relaxed environment) who still had bad experiences.

Epilogue

Until more is known about the short- and long-term effects of LSD as well as how to predict who will have a bad experience, it must be considered a very dangerous drug. Unfortunately, the ready market for and the easy manufacture of the drug, have resulted in an almost unlimited black market supply. This colorless, odorless, tasteless liquid will be practically impossible to regulate by law alone. There is no test yet developed to detect the drug inside the body. It can be concealed on the back of an envelope or soaked into a coat, and one can take a trip merely by licking the envelope flap or sucking on the coat lapel. The LSD users are often the very people who have the most to lose from its use. We certainly hope that LSD research will resume, but we appeal to those who loudly proclaim that "everyone" should take LSD to consider the highly subjective and often untoward response to the drug. We have frequently seen the most ardent enthusiast become the most eloquent opponent after just one bad trip.

Man's search for Eldorado continues. LSD will surely become obsolete as other more potent "psychedelics" are developed. Already a compound "DMT" (dimethyltryptamine) is available in limited amount in the black market, and there are now "sophisticated" users who scoff at something as weak and unappealing as LSD.